



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-------------------------|-------------|----------------------|------------------------|------------------|
| 10/092,506 | 03/08/2002 | Bruce W. Smith | P 284421 P-0276.012-US | 4611 |
| 909 | 7590 | 01/02/2004 | EXAMINER | |
| PILLSBURY WINTHROP, LLP | | | NGUYEN, HUNG | |
| P.O. BOX 10500 | | | ART UNIT | PAPER NUMBER |
| MCLEAN, VA 22102 | | | 2851 | |

DATE MAILED: 01/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/092,506 | SMITH, BRUCE W. | |
| | Examiner | Art Unit | |
| | Hung Henry V Nguyen | 2851 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment filed 10/9/03.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 23-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-17 is/are allowed.
- 6) ☒ Claim(s) 1-11, 18, 23-33 and 40 is/are rejected.
- 7) ☒ Claim(s) 34-39 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-11, 18, 23-33, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa (U.S.Pat. 5,627,625) in view of either Sunda et al (U.S.Pat. 4,970,586) or Spencer (U.S.Pat. 6,356,340).

With respect to claims 1-11, 18 and 23-33, and 40, Ogawa discloses an illumination system and corresponding method comprising substantially all basic features of the instant claims such as: a light source (11) for emitting light of desired wavelength (KrF excimer laser) in a optical path toward a pupil (see fig.2); shaping optical system (12-18) having a plurality of masking apertures for shaping the light source into a shaped illumination pattern having one or more zones where the intensity of the light in the zones varies to provide a shaped illumination for each zones (see abstract); a fly's-eye lens (19) for optically integrating light incident on the pupil; a square shape aperture (22) "comprises a translucent substrate and a square pattern or a metal plate with a square aperture", and the square aperture is placed proximate the pupil for squaring the edges of the shaped illumination distribution pattern; and optical means for combining the shaped illumination to illuminating the photomask (25) and a wedge shaped prism (17) for diffracting the light and forming a pattern of illumination intensity in one or more zones (4 beams) wherein each zone has a shape corresponding to shapes selected from the group as

recited (see fig.4). Ogawa does not expressly disclose the beam shaping optical system comprising a masking aperture as claimed.

Sunda et al (U.S.Pat. 4,970,586). Sunda et al discloses a masking aperture comprising a transparent substrate and a half tone dithered image on the substrate (see figs.4-6) the half-tone image including an array of pixels which are arranged in accordance with features on the photomask to be illuminated (see col.4, lines 33-62; col.5, lines 25-32). Sunda further teaches the masking aperture (100-105) comprising one or more zones arranged symmetrical/or asymmetrical (see fig.4) about the center of the masking aperture.

Spencer teaches a masking aperture having a transparent substrate and a half tone dithered pattern comprising an array of pixels formed on the substrate (see fig.1-2).

In view of such teachings, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the masking aperture as taught by Sunda/or Spencer to the illumination system of Ogawa to obtain the invention as specified in the above claims. The purpose of doing so would have been to improve the resolution of the images to be printed and thus the quality of the exposure apparatus is greatly obtained.

Allowable Subject Matter

3. Claims 12-17 are allowed.
4. Claims 34-39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Amendment/Arguments

5. Applicant's amendment filed October 9, 2003 have been entered. Applicant's arguments with respect to the prior art have been carefully considered but have been traversed in view of new ground of rejection as set forth above.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V Nguyen whose telephone number is 703-305-6462. The examiner can normally be reached on Monday-Friday (First Friday off).

Application/Control Number: 10/092,506

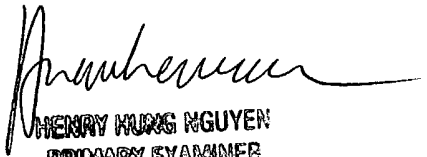
Page 5

Art Unit: 2851

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703-308-2847. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

hvn
12/19/03



HENRY HUNG NGUYEN
PRIMARY EXAMINER